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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/550,405 04/14/00 IO

E APM-01301 NV

026339 MM91/0516
HUTCHINS, WHEELER & DITTMAR
101 FEDERAL STREET
BOSTON MA 02110

EXAMINER

NADAV, O

ART UNIT

PAPER NUMBER

2811

DATE MAILED:

05/16/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/550,405

Applicant(s)

lo

Examiner

ORI NADAV

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Apr 24, 2001
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above, claim(s) 12-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 3 20) ☐ Other:

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DETAILED ACTION

Election/Restriction

1. Applicant's election of claims 1-11 in Paper No. 6 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

3. Claim 6 is objected to because of the following informalities: Lines 11-13 should follow lines 14-16. Appropriate correction is required.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1-4, 6 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Cheng et al. (5,545,575).

Cheng et al. teach in figure 7 a semiconductor device comprising a semiconductor substrate 11, an insulating layer 19 defining device regions, a gate region 28, source and drain regions 57, 58 around the gate electrode, a sidewall 66 covering the gate electrode and having a sidewall offset extending outwardly of the gate electrode along a surface of the substrate in both regions above the source and drain regions, silicide wiring layers 64 formed at surfaces of the source and drain layers being located outwardly beyond a peripheral edge of the sidewall offset, at least one of the source and drain region layers extending towards the gate electrode beyond an edge of the sidewall offset, and second diffusion layers 43, 44 of lower impurity concentration than that of the source and drain regions (column 4, lines 24-26 and column 6, lines 2-4) formed below and surrounding the source and drain layers

5. Claims 1-2 and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kunishima et al. (5,316,977).

Kunishima et al. teach in figure 5C a semiconductor device comprising a semiconductor substrate 1, an insulating layer 3 defining device regions, a gate region 5, source and drain regions 17 around the gate electrode, a sidewall 23 covering the gate electrode and having a sidewall offset extending outwardly of the gate electrode along a surface

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of the substrate in both regions above the source and drain regions, titanium silicide wiring layers 51 (column 10, line 53) formed at surfaces of the source and drain layers being located outwardly beyond a peripheral edge of the sidewall offset, at least one of the source and drain region layers extending towards the gate electrode beyond an edge of the sidewall offset.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng et al. in view of Kunishima et al.

Cheng et al. teach substantially the entire claimed structure, as applied to claims 1 and 6 above, except a silicide layer comprising titanium silicide.

Kunishima et al. teach in figure 5C a silicide layer 21 comprising titanium silicide.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a titanium silicide in Cheng et al.'s device, because titanium silicide is a conventional silicide material, of which official notice may be taken.

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Regarding claims 5 and 11, Kunishima et al. teach using the semiconductor device as a CMOS device, and it is well known in the art that CMOS devices are used as memory devices.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Cheng et al.'s device as a memory device, because the intended use of a device depends on the requirements of the application in hand.

Note that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

In the alternative, Kunishima et al. teach substantially the entire claimed structure, as applied to claims 1 and 6 above, except second diffusion layers of lower impurity concentration than that of the source and drain regions being formed below and surrounding the source and drain layers.

Cheng et al. teach in figure 7 second diffusion layers 43, 44 of lower impurity concentration than that of the source and drain regions (column 4, lines 24-26 and column 6, lines 2-4) formed below and surrounding the source and drain layers.

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It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form second diffusion layers of lower impurity concentration than that of the source and drain regions below and surrounding the source and drain layers in Kunishima et al.'s device, because it is known in the art to form halo regions of lower impurity concentration than that of the source and drain regions below and surrounding the source and drain layers in order to improve the performance of the device.

Regarding claims 5 and 11, Kunishima et al. teach using the semiconductor device as a CMOS device, and it is well known in the art that CMOS devices are used as memory devices.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Kunishima et al.'s device as a memory device, because the intended use of a device depends on the requirements of the application in hand.

Note that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

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8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reference N is cited as being related to device having a sidewall offset.

Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

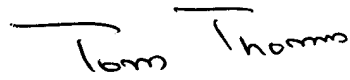
Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(703) 308-8138**. The Examiner is in the Office generally between the hours of 7 AM to 3 PM (Eastern Standard Time) Monday through Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas, can be reached at **(703) 308-2772**.

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Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**

Ori Nadav, Ph.D.

May 7, 2001


TOM THOMAS
SUPERVISORY PATENT EXAMINER